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Handbook for the Environment Unit of the Ministry of Planning

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The objective of the Project in Development and the Environment (PRIDE) is to help the U.S. Agency for International Development (AID) design and implement programs that foster the agency's environmental and natural resources strategy for sustainable economic growth in the Near East and Eastern Europe.

PRIDE provides AID and participating countries with advisory assistance, training, and information services in four program areas: (1) strategic planning, (2) environmental policy analysis, (3) private sector initiatives, and (4) environmental information, education, communication, and institutional strengthening.

The project is being implemented by a consortium selected through open competition in 1991. Chemonics International is the prime contractor; subcontractors include RCG/Hagler, Bailly, Inc.; Science Applications International Corporation; Capital Systems Group, Inc.; Environomics, Inc.; Industrial Economics, Inc.; Lincoln University; and Resource Management International, Inc. In addition, AID has entered into a cooperative agreement with the World Environment Center to support implementation of PRIDE.

The opinions expressed in this paper are those of the author(s) and do not necessarily reflect the positions of the sponsoring agency or contractors.

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Handbook for the Environment Unit of the Ministry of Planning

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July 1996

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ACRONYMS

CEP	Council of Environment Protection
EU/MOP	Environment Unit of the Ministry of Planning
EIA	Environmental impact assessment
EIS	Environmental impact statement
ERC	Environmental Research Center
FJE	Friends of the Jordanian Environment
GCEP	General Corporation for Environment Protection
GOJ	Government of Jordan
HCST	Higher Council for Science and Technology
IUCN	International Union for the Conservation of Nature
JD	Jordanian dinar
JES	Jordanian Environmental Society
JSCDDDB	Jordanian Society to Combat Desertification and Develop the Badia
MMRAE	Ministry of Municipal and Rural Affairs and the Environment
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOL	Ministry of Labor
MOP	Ministry of Planning
MTA	Ministry of Tourism and Antiquities
MWI	Ministry of Water and Irrigation
MEMR	Ministry of Energy and Mineral Resources
NEAP	National Environment Action Plan
NES	National Environment Strategy
RSCN	Royal Society for Conservation of Nature
RSS	Royal Scientific Society
SCE	Jordanian Students Clean Environment Society
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

SECTION I INTRODUCTION

Jordan was one of the first countries in the Near East to seek solutions to environmental problems by introducing the concept of environmental protection to government ministries. The country has also helped establish scientific institutions and non-governmental organizations to increase awareness of the need to regulate natural resource use and impose limits on pollution created by mining, industry, pesticides, and waste disposal.

The Ministry of Planning (MOP) has played a significant role in environmental protection by preparing and monitoring the country's social and economic development plan and channeling international funding from donors to Jordanian governmental and non-governmental agencies, institutions, and organizations. Within MOP, the Environment Unit (EU/MOP) facilitates foreign assistance to environmental projects in Jordan and assists other ministry units in assessing the environmental impact of proposed projects.

The purpose of this document, the Environment Unit Handbook, is to provide information on how environmental projects and programs are identified, designed, reviewed, and monitored in the Ministry of Planning. The handbook discusses the role and organization of the ministry and its project review process. It explains how environmental issues are addressed in national planning and policies and highlights the Environment Unit's role in facilitating national environmental policy implementation. The handbook's three annexes present information on environmental conditions, management, and projects in Jordan.

This handbook is designed to be a living document, as plans, policies, and organizational structures will change over time, along with environmental projects and programs. We will periodically update this handbook to accommodate such changes. For up-to-date information, please check with the Environment Unit for the handbook's latest edition.

SECTION II

BACKGROUND ON THE MINISTRY OF PLANNING

A. Role of the Ministry of Planning

The Ministry of Planning (MOP) is the official government body entrusted with national, social, and economic development planning. To that end, MOP:

- Identifies policies and instruments for the promotion of social and economic development
- Prepares short- and long-term social and economic development plans
- Monitors and readjusts strategies and plans in response to project performance and changes in policies and priorities
- Coordinates project activities and donor relations

MOP is also responsible for channeling international funds from donors to Jordanian governmental and non-governmental agencies, institutions, and organizations.

Although MOP is charged with developing national planning, implementation is the responsibility of technical ministries (Exhibit I-1). While MOP is involved in facilitating and monitoring the use of international funding, such funding is generally managed by those ministries. MOP manages programs financed by international funds only when directed at national policy and planning activities.

Exhibit I-1. Principal Technical Ministries Receiving International Funding	
Ministry of Agriculture	
Ministry of Education	
Ministry of Energy and Mineral Resources	
Ministry of Health	
Ministry of Industry and Trade	
Ministry of Labor	
Ministry of Municipal and Rural Affairs and the Environment	
Ministry of Public Works and Housing	
Ministry of Social Development	
Ministry of Tourism and Antiquities	
Ministry of Transport	
Ministry of Water and Irrigation	

B. Organization of the Ministry of Planning

An organization chart for MOP is presented in Exhibit I-1. The minister of Planning is appointed by the prime minister. Under the minister is the secretary general who manages the day-to-day functions of MOP. The secretary general has three assistant secretaries general. The

secretary general and the assistant secretaries general oversee the operation of 17 directorates, each managed by a director. Several of the directorates are further divided into units, which are not shown in Exhibit 1-1. The six directorates under the assistant secretary general without portfolio are referred to as the sectoral directorates. These are the directorates that provide technical review and monitoring for most projects with donor funding. The four directorates under the assistant secretary general for International Cooperation Affairs as well as the Directorate of Projects Follow-up directly under the secretary general are involved in financial review and monitoring of donor-funded projects. The other six directorates are involved primarily in MOP planning and administration.

C. Project Cycle Within the Ministry of Planning

The project cycle in MOP consists of seven steps: initiation, delegation, review, solicitation, preparation, approval, and monitoring. These steps are shown in Exhibit I-2. Each step is described below.

Initiation. Initiation involves the identification of projects for international funding and preparation of preliminary proposals. MOP is not responsible for identification or preparation of project proposals. Initiation is the responsibility of funding recipients such as technical ministries, scientific institutions, and non-governmental organizations. Donors are also responsible for identifying and informing MOP of the type of projects they are willing to fund. MOP assists recipients and donors, when necessary, with information regarding the government's needs and development priorities. Once a project has been identified, the potential recipient is responsible for preparing a preliminary project and submitting it to MOP.

Delegation. All official requests for donor funding must be submitted in writing to MOP. Project proposals submitted to MOP are registered and tracked by the Registry Office. The office submits the proposals to the minister and the secretary general for delegation to the appropriate assistant secretary general. The assistant secretary general assigns the review of the proposal to the appropriate directorate, and the director assigns review to the appropriate unit in his or her directorate.

Review. The proposal is reviewed on the basis of its technical merits, conformance with national funding priorities, and funding availability. The review concludes with acceptance or rejection of the proposal for solicitation of foreign donor funds. During review of a proposal, the unit responsible for review may consult with the agency, institution, or organization that prepared the proposal, donor agencies, and other MOP staff. Once the review is completed, the unit returns the proposal to the director with a recommendation for acceptance or rejection and an explanation for the recommendation. The director can continue the review, consulting with the preparer, technical ministry staff, his staff, and other MOP staff. The director can also request that the proposal be modified or rewritten. After he completes his review, the director forwards the proposal to the assistant secretary general with a recommendation for acceptance or rejection and the reasons for his recommendation. The assistant secretary general can conduct further review and provide comments before submitting the proposal to the secretary general and minister for a decision. The minister and secretary general make the final decision as to whether the proposal should be accepted or rejected and inform the Registry Office. The Registry Office informs the appropriate assistant secretary general, director, and unit, as well as the applicant submitting the proposal.

Solicitation. If the decision is to accept the project proposal, the responsible unit prepares a project profile to submit to potential donors. The project profile consists of project title, background, objectives, components, capacity, duration, estimated cost, and current status. The directorate and unit to which the project has been assigned, in cooperation with the appropriate directorates under the assistant secretary general for International Cooperation Affairs, try to match the project proposal with donor funding.

Preparation. When a potential donor shows interest in the project profile, MOP and the potential recipient conduct further negotiations and document exchange to determine the donor's proposal requirements. If negotiations are fruitful, the potential recipient prepares a proposal to the donor's specifications for submittal. The unit to which the project is assigned as well as the appropriate directorate under the assistant secretary general for International Cooperation Affairs review project proposal drafts to verify that they meet donor requirements.

Approval. If an agreement is reached among MOP, donor, and recipient regarding the technical and financial requirements of the proposed project, it is sent to the minister and secretary general for review and approval. If approved, the proposed project is sent to the prime minister. If the prime minister approves the project, he informs Parliament and authorizes the minister of Planning to sign a project agreement on behalf of the Government of Jordan.

Monitoring. MOP is responsible for monitoring the implementation of projects funded by foreign donors. The directorate and unit to which a project is assigned track technical progress and make regular site visits. The Directorate of Projects and the appropriate directorate under the assistant secretary for International Cooperation Affairs monitor expenditures and compliance with funding requirements.

Exhibit II-2. Organizational Structure of the Ministry of Planning

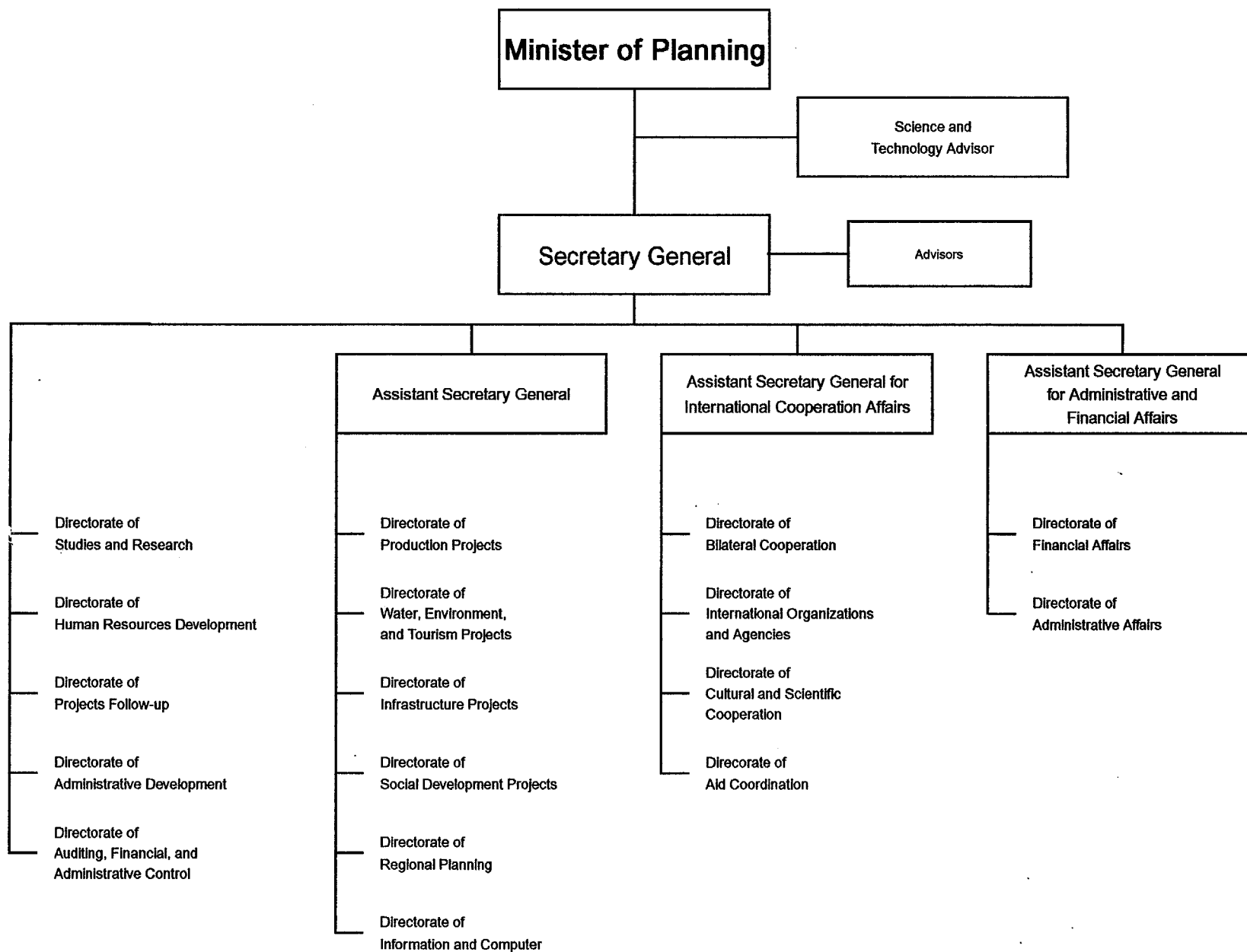
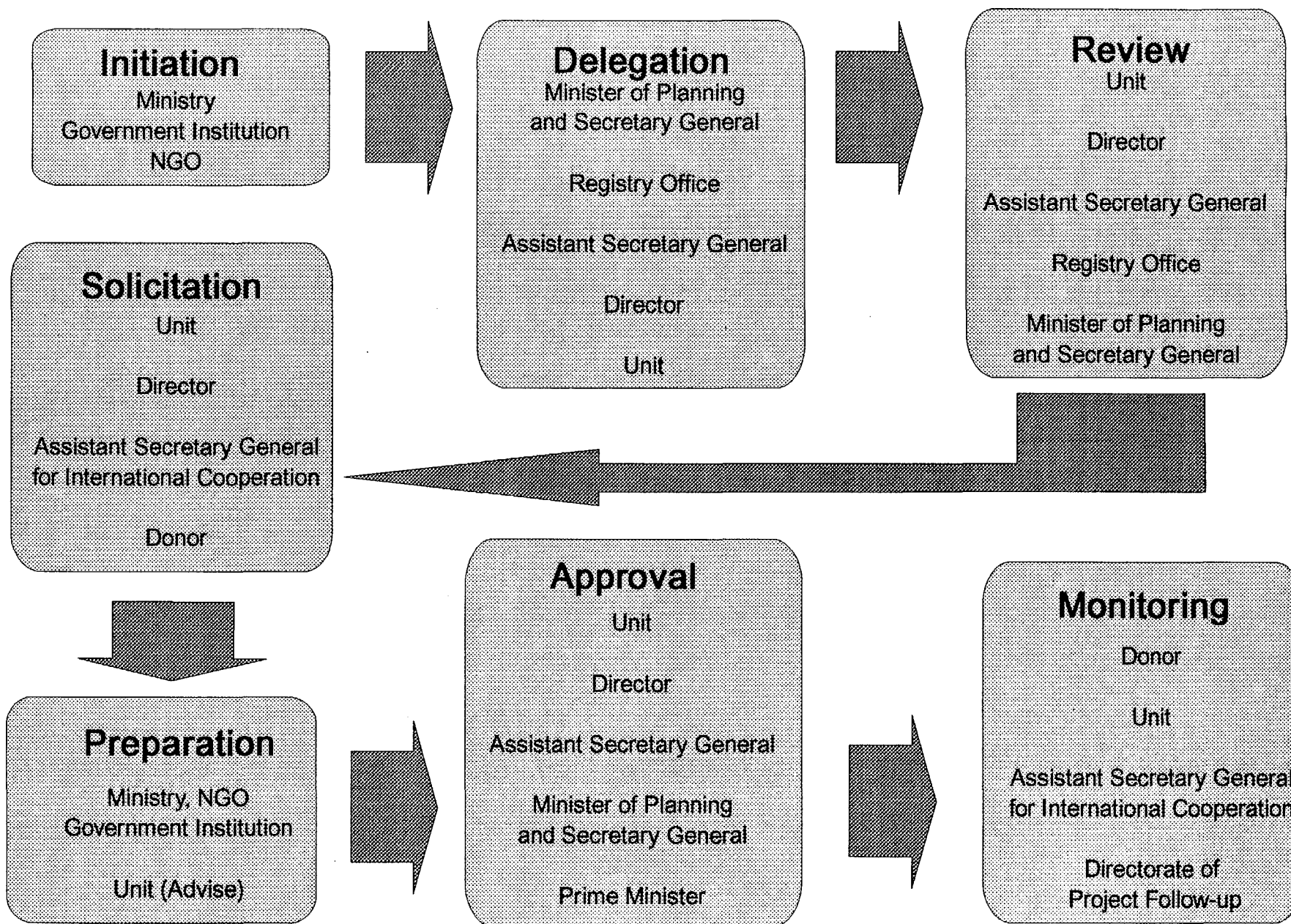


Exhibit II-3. Project Cycle Within the Ministry of Planning



SECTION III

ENVIRONMENT IN THE MINISTRY OF PLANNING

MOP addresses environmental issues through the National Economic and Social Development Plan, The National Environmental Action Plan, and the Environment Unit in the Directorate of Water, Environment, and Tourism Projects.

A. Environmental Components in National Plan

The Economic and Social Development Plan for 1993 through 1997 addresses the environment as a cross-sectoral issue. Protection of the environment is a significant part of the plan's of the overall economic and social objectives.

“Conserving the environment and preventing deterioration of its component elements through regulating economic and human activities in such a way as to secure a healthy environment for people as well as for fauna and flora, to ensure the non-depletion of exhaustible resources and to check soil erosion, desertification and pollution.” (Objective 8, page 101)

The plan identifies five environmental challenges for the 1990s:

- Reducing the water deficit
- Limiting water salinization and depletion
- Using environmentally safe agricultural methods to ensure that levels of insecticide residues fall within accepted limits
- Recycling and reusing wastes
- Adopting methods to manage hazardous and radioactive chemicals

To respond to these challenges, the plan makes the following recommendations:

- Establish an independent specialized authority to regulate and manage environmental affairs
- Create and accredit an environmental monitoring center affiliated with the Higher Council for Science and Technology to coordinate procedures in environmental laboratories
- Enact a unified environment protection law and draw up related by-laws and regulations for integrated environmental management
- Reduce to international standards air pollution emissions, particularly vehicle exhaust fumes and industrial emissions
- Control transboundary pollution

- Check soil erosion and desertification through land-use control and protection of vegetative cover
- Reduce insecticide use through educational programmes on the use of chemicals in agriculture
- Establish nature reserves and protected areas
- Formulate environment management programs and information systems
- Produce media programs to sensitize individuals and society on the importance of environmental protection
- Continue cooperation with international agencies on the implementation of the UN Conference on Environment and Development and the conventions on Climate Change and Biological Diversity

In addition, the plan outlines environmental policies in the investment and infrastructure sectors that concern the conservation of rangeland, water, and energy.

B. The National Environmental Action Plan and its Priorities for Jordan

In 1991, the Ministry of Municipal and Rural Affairs, and the Environment (MMRAE) published the National Environment Strategy. The strategy was prepared with technical and financial support from the International Union for the Conservation of Nature (IUCN) and the United States Agency for International Development (USAID). During the two and a half years needed to prepare the strategy, approximately 180 national specialists from a wide spectrum of disciplines were developed 400 recommendations for environmental protection and conservation.

While the National Environmental Strategy generated recommendations, it did not prioritize them. In 1995, MOP, with support from the World Bank, initiated preparation of a National Environmental Action Plan (NEAP), which identified 41 priority environmental needs, which included four cross-sectoral environmental management capacity building needs and 37 sectoral environmental actions. Sensitive to the time and financial constraints, the NEAP identified 19 actions for immediate attention:

1. National environmental management by the General Corporation for Environment Protection
2. Rehabilitation of wastewater treatment plants
3. Upgrading of industrial technologies to minimize water pollution
4. Pricing of water
5. Enforcement of regulations in the water sector
6. Restructuring of the water sector
7. Development of water resources under the Jordan-Israel Peace Treaty
8. Development of a national land use planning/zoning system
9. Management of agricultural plastic waste
10. Preservation of forest lands
11. Development of regulations to control urban/industrial pollution
12. Treatment, storage, and disposal of hazardous waste

13. Study and plans for waste management in Municipality of Greater Amman, and country-wide priority actions for waste disposal sites
14. Closure and replacement of waste disposal sites at Marka and Akaidar
15. Urban and regional land use planning
16. Improved management of national cultural and natural heritage
17. Development of a national plan for heritage utilization
18. Completion of the protected area network
19. National biodiversity inventory

For each of the Phase I actions, the NEAP developed a project outline, including goals, objectives, outputs, implementation responsibility, and estimated cost. Total cost of implementation of Phase I actions is estimated at \$49 million. A copy of the NEAP can be obtained from the Environmental Unit of the MOP.

C. Environmental Impact Assessment

The Law of Environment Protection for 1995 authorized the creation of the Council of Environment Protection and the General Corporation for Environment Protection. The corporation is responsible for establishing procedures for assessing the environmental impact of proposed projects in Jordan. The corporation and council are currently working together to develop these procedures, which must be approved by the council.

As most environmental impact assessments conducted in Jordan are required by foreign donors, they have been prepared in accordance with donor specifications. EU/MOP frequently reviews these assessments. Recently, MOP has required environmental impact assessments for certain projects not funded by foreign donors. For example, MOP required an environmental assessment in accordance with internationally acceptable procedures for the Dead Sea Master Plan.

D. Role of the Environment Unit

The Environment Unit reviews the environmental projects and proposals submitted to MOP and monitors environmental projects and programs financed by foreign donors. It facilitates between the technical institutions including the sectoral ministries, non-governmental organizations, and scientific institutions and the requirements of donors such as international development agencies, funding institutions, and missions providing financing and technical assistance.

The EU/MOP assists technical institutions by providing them with:

- Details regarding the current environmental priorities for the Government of Jordan
- Advice on the types of environmental projects and proposals to pursue
- Information on the format and required content of project proposals for donor agencies, including management styles and implementation techniques
- Assistance in preparing project proposals that meet donor requirements

The EU/MOP assists donor agencies by providing:

- Details regarding the government's current environmental priorities
- Ideas and clarifications on the applicability, feasibility, and implementation of proposed projects
- Opportunities to meet recipients to facilitate identification of study areas, environmental issues, alternatives, related decisions, and affected parties
- Pre-qualification standards for firms and consulting agencies bidding for preparation or evaluation of proposals
- Comments on progress reports from implementing agencies on projects funded by donors through MOP
- Advice on eliminating duplication of funding activities by keeping donors informed on progress on environmental projects in Jordan

ANNEX A

DESCRIPTION OF THE ENVIRONMENT IN JORDAN

Jordan has a total area of 8.9 million hectares. The country is divided into three geographic regions. From west to east, these regions are:

The Jordan Rift Valley, a fault that extends from Lake Tiberias in the north to the Gulf of Aqaba in the south. The Jordan Valley, Dead Sea, and Wadi Araba are located in this region. The Dead Sea, at an elevation of 400 meters below sea level, is the lowest depression on earth. Average rainfall in this region is 300 to 400 mm per year in the Jordan Valley, 50 to 100 mm in the Dead Sea, and less than 50 mm in Wadi Araba.

The Mountainous Region, forming the eastern boundary of the Rift Valley and extending from Lake Tiberias to the Gulf of Aqaba. Mountains in this region have elevations ranging from 1,200 to 1,500 meters. The region has a relatively mild climate with winter rains. The higher elevation receive occasional winter snow storms. Average annual precipitation in the region varies from 600 mm in the north to 100 to 300 mm in the south. Ninety percent of Jordan's population lives in this region.

The Eastern Desert (also referred to as the Badia) lies east of the Mountainous Region and covers 80 percent of the land area of Jordan. This region is characterized by a dry, hot climate. Most of the region is flat or hilly, but in the south lies the highest mountains in Jordan, Rum Mountain at 1,753 meters and Um Eshrin Mountain at 1,753 meters.

The most common natural ecosystems in Jordan are deserts in the east and south, bush steppe in the Mountainous Region and in the northeast Badia, and steppe grasslands and Mediterranean scrub in the Mountainous Region. Juniper and oak woodlands are found at higher elevations in the mountains, as well as planted pine forests. Wetlands are located at several oasis throughout the country. The Gulf of Aqaba contains some of the most northern coral reefs and mangrove stands in the world. The gulf supports over 1,000 species of fish.

Lying in the heart of the Middle East, Jordan has for millennia been a corridor connecting the populations of the continents of Asia, Europe, and Africa. As a result, the country has been settled and occupied by many different cultures, leaving diverse and rich archaeological remains.

Millennia of human occupation has resulted in drastic changes to the environment and vegetative cover, leading to the replacement of natural vegetation by secondary species and resulting altered plant associations over most of Jordan. Only about 10 percent of the total land area (primarily in the Jordan Valley and Mountainous Region) is cultivable, of which only 4.2 percent is suitable for rainfed farming. Most of the intensive fruit and vegetable production depends on the 67,300 hectares under irrigation.

Jordan's primary mineral asset is phosphate, which is estimated at over 1,500 million tons and located in the Eastern Desert region. The Dead Sea is mined for dissolved salts, including potash, bromide, magnesium chloride, and sodium chloride. Although Jordan has an estimated 50 billion tons of oil-bearing shale rock reserves, their exploitation does not currently appear to be

financially viable. Natural gas is produced in the Risha region and used for the generation of electricity.

Jordan has a water shortage. As a result of rapid population growth, aquifers are over-pumped, severely affecting the quantity and quality of Jordan's water supply. The population of Jordan in 1988 was estimated at approximately 2.9 million persons. By 1994, it had grown to approximately 4.1 million. The increase in population has put pressure on scarce arable land and important cultural resources.

The National Environmental Action Plan identified 10 priority environmental issues for Jordan:

- Water depletion
- Water pollution
- Land degradation
- Land contamination
- Coastal zone degradation
- Waste management
- Air pollution
- Uncontrolled urban expansion
- Cultural heritage degradation
- Habitat degradation

ANNEX B

INSTITUTIONAL RESPONSIBILITIES FOR THE ENVIRONMENT IN JORDAN

The information presented in this annex was gathered from the published reports cited at the end of the annex, supplemented by personal interviews. Information on government institutions with environmental responsibilities is summarized in Exhibit B-1.

A. National Governmental Institutions

A1. Council of Environment Protection (CEP)

The Council of Environment Protection was created by the Law of Environment Protection for 1995. The council is composed of the secretaries general from several ministries, the under secretary general of the Amman Governorate, the secretary general of the Aqaba Regional Authority, the general manager of Civil Defense, the general manager of the Housing and Urban Development Corporation, the presidents of JES, RSCN, RSS, and JSCDDDB, and three individuals with experience in environmental protection. The president of the council is the minister of Municipal, Rural Affairs and the Environment and the general manager of the General Corporation for Environment Protection (GCEP) is the vice president. The council has the authority to establish general environmental protection policies, and issue interpretations for the implementation of the Law of Environment Protection, including approval of related actions and regulations. The council approves environmental standards and oversees the operation of the GCEP.

A2. General Corporation for Environment Protection (GCEP)

The General Corporation for Environment Protection was created by the Law of Environment Protection for 1995. The corporation is attached to the Ministry of Municipal, Rural Affairs and the Environment (MMRAE), but it is responsible to the Council of Environment Protection. The corporation, in coordination with relevant parties, is responsible for establishing water and air quality standards, monitoring water and air quality, identifying potential industrial sources of air pollution, monitoring soil quality and the causes of soil degradation, and regulating hazardous and solid wastes. It is also responsible for preparing and implementing the national strategy for protection of the environment, establishing conditions for wild reserves and national parks, establishing an environmental impact assessment program in Jordan, and coordinating with international, regional, and local environmental organizations.

The staff and responsibilities of the former Department of the Environment in MMRAE were transferred to the corporation when it was established in 1996. These responsibilities included the issuance of licenses for industrial and commercial facilities for which the GCEP reviews applications. Other ministries including the Ministry of Health are represented on the committee. The corporation, which is still new, has yet to establish mechanisms for implementing many of its other responsibilities.

Although the corporation has responsibility for monitoring environmental quality, it has no laboratories for this task. It must contract its monitoring services from other institutions such as the Royal Scientific Society.

A3. Ministry of Agriculture (MOA)

The Ministry of Agriculture is responsible for agriculture throughout Jordan. To the extent that agricultural management involves environmental oversight, all of the departments in the ministry have environmental responsibilities. However, the following three units in the ministry are specifically charged with environmental responsibilities.

Department of Afforestation and Forests. The Department of Afforestation and Forests establishes, protects, and monitors new forests and manages natural forests and grazing reserves. It also evaluates watershed conditions and erosion problems on forests and rangelands.

Pesticide Residue Laboratory. The Pesticide Residue Laboratory tests pesticides for quality control and conducts routine tests on pesticide residues in food. The laboratory has the capability to test for pesticide residues in soil and water as well as food, but such testing is done only when requested and not as a part of its routine testing program.

Department of Plant Protection. The Department of Plant Protection is responsible for pesticides registration in Jordan. MOA has a Committee for Pesticide Registration that reviews applications for registration and makes recommendations to the minister of Agriculture on pesticides to be registered and labeling requirements. The committee is composed of representatives from the Department of Plant Protection, the Pesticide Residue Laboratory, the National Center for Agriculture Research and Technology Transfer, GCEP, MOH, the Agriculture Department of University of Jordan, and the private agriculture industry. The Department of Plant Protection, with MOA's Department of Information and Extension, is also responsible for educating applicators on proper handling and application of pesticides.

A4. Ministry of Energy and Mineral Resources (MEMR)

Central Energy and Environment Unit. The Central Energy and Environment Unit is located in the Directorate of Planning of MEMR. It produces environmental guidelines and prepares and reviews environmental impact assessments for energy projects. It conducts energy and environmental surveys and audits, advises and trains personnel in the power sector on compliance with environmental laws and regulations, and develops public awareness programs. The Central Energy and Environment Unit also proposes programs, policies, plans, and strategies for conservation of energy and protection of the environment.

Jordan Electricity Authority. The Jordan Electricity Authority has an Environment Section in its Corporate and Technical Planning Division. The Environment Section is responsible for controlling pollution from the power generation systems under its authority.

Natural Resources Authority. The Environmental Geological Center in the Natural Resources Authority is responsible for addressing environmental issues associated with mining activities.

Nuclear Energy Department. The Nuclear Energy Department monitors radiation levels in food and the environment.

Renewable Energy Directorate. The Renewable Energy Directorate studies and researches renewable energy and develops plans for its development.

A5. Ministry of Health (MOH)

Environmental Health Directorate. The Environmental Health Directorate monitors the quality of food, domestic water, wastewater discharges, ambient water, and ambient air. It also inspects solid waste disposal sites. The directorate has its own laboratory to analyze chemical, heavy metal, and microbiological parameters in water and air. The Laboratory Section of the Directorate has recently established a chemical information center to provide information on the toxic effects, potential environmental impacts, and safe handling and clean-up procedures for chemicals.

The Environmental Health Directorate has a representative on the GCEP committee that reviews applications for industrial facility licenses. To support this activity, MOH has its own committee with representatives from the various MOH directorates that reviews the health and safety impact of proposed industrial activities and recommends appropriate permit requirements.

Occupational Health and Safety Directorate. The Occupational Health and Safety Directorate monitors environmental conditions inside work places. A representative from the directorate sits on the Committee for Pesticide Registration in MOA.

A6. Ministry of Industry and Trade (MIT)

Directorate of Standards and Measures. The Directorate of Standards and Measures is responsible for promulgating and monitoring industrial standards. It implements the 1991 Jordanian Standard Specifications No. 202 which limits discharges of industrial pollutants.

A7. Ministry of Interior (MOI)

Directorate for Civil Defense. The Directorate for Civil Defense is responsible for emergency response to chemical spills.

A8. Ministry of Labor (MOL)

Occupational Safety and Health Institute. The Occupational Safety and Health Institute monitors noise and air pollutants in work environments. It also conducts studies on work environments and worker health.

A9. Ministry of Planning (MOP)

Environment Unit. The Environment Unit in the Directorate for Water, Environment, and Tourism coordinates, prioritizes, and seeks donor funding for the environmental projects and programs of ministries, other governmental institutions, and non-governmental organizations. It is a cosponsor, with MMRAE, for the development of the National Environmental Action Plan.

A10. Ministry of Public Works and Housing (MPWH)

Housing and Urban Development Corporation. The Housing and Urban Development Corporation develops housing and urban infrastructure including site appraisal and selection, preparation of design, and management of construction contracts. The corporation coordinates its activities with other concerned authorities.

A11. Ministry of Tourism and Antiquities (MTA)

Department of Antiquities. The Department of Antiquities is responsible for protecting antiquities from improper development. This authority is granted to the department by the Antiquities Law (Law No. 21 of 1988). Antiquities are defined by the law as "any object...which has been constructed, shaped, inscribed, erected, excavated, or otherwise produced or modified by humankind earlier than the year 1700 A.D."

Department of Tourism. The Department of Tourism is responsible for promoting tourism.

A12. Ministry of Water and Irrigation (MWI)

Water Authority of Jordan (WAJ). The Water Authority of Jordan is charged with the management of groundwater and surface water quantity and quality in Jordan. It is responsible for the design, construction, operation, and maintenance of water and wastewater facilities. It licenses water withdrawals and monitors the quantity and quality of water. WAJ monitors water quality of domestic water (before the meter), industrial effluent, wastewater treatment plant effluent, and some streams and side wadis, both upstream and downstream of effluent discharge points.

WAJ has seven water quality laboratories, with capabilities to monitor hydrochemicals, organic chemicals, biochemicals, microbiology, trace metals, and isotopes. The laboratories have strict sampling protocols and quality control and have won international awards for quality control.

WAJ has authority to promulgated water quality standards (Water Authority Law, Law No. 18 of 1988). It has promulgated effluent standards for wastewater treatment plant discharges and wastewater reuse for irrigation as well as effluent pretreatment standards for industrial discharges to municipal wastewater treatment systems. It has also promulgated water quality standards for domestic water.

A13. The Higher Council for Science and Technology (HCST) and the Royal Scientific Society (RSS)

The Higher Council for Science and Technology is mandated to set public policies and strategies for science and technology in a number of sectors, including the environment. The council promotes environmental research through commissions with universities and research centers. The HCST, in cooperation with the RSS, implements the Badia Research and Development program. The objective of the program is sustainable development of the desertified Badia and improvement of the standard of living of Badia inhabitants.

A14. Royal Scientific Society (RSS)

Environmental Research Center. The Environmental Research Center has laboratory facilities capable of conducting quality analyses for water and air. The center contracts with government institutions to conduct environmental monitoring. It also conducts some independent research on environmental science.

Renewable Energy Research Center. The Renewable Energy Research Center conducts research on solar and windmill technologies.

B. Regional Governmental Institutions

B1. Aqaba Regional Authority (ARA)

The Aqaba Regional Authority is "responsible for the social and economic development of the region and the formulation of the needed policies, plans, and programs in coordination with concerned public and private agencies." (Law No. 7 of 1987) ARA has an environmental committee and an environmental section in its Studies and Research Department. It has been involved in construction of a wastewater treatment plant, road construction, port clean up, and management of coral reef reserves.

Recently ARA adopted an environmental action plan calling for increased legal and institutional capacity to manage and regulate the environment in the Aqaba region. The action plan also calls for investments in industrial and marine pollution control, water conservation and wastewater management, solid waste management, fisheries management, protected areas management, air and water quality monitoring, and public awareness and environmental education. The plan is currently under implementation.

B2. Aqaba Port Corporation

The Aqaba Port Corporation is responsible for operation of port facilities. Its responsibilities include cleanliness of port facilities, pest and rodent control, supervision of handling and storage of hazardous substances, and monitoring and control of marine pollution.

B3. Jordan Valley Authority (JVA)

The Jordan Valley Authority is responsible for development of water resources for agricultural, municipal, and industrial use in the Jordan Valley. The JVA is under the Ministry of Water and Irrigation, but only has authority in the Jordan Valley. Each of the four subregional directorates in JVA have environment, water, and soil quality and agricultural sections. These sections, in cooperation with the JVA's Labs, Soil, and Environment Directorate, monitor and analyze salinity and other parameters affecting the use of soil and water for agriculture. These sections are also responsible for addressing other environmental issues associated with development in the Jordan Valley.

C. Non-governmental Institutions

C1. Royal Society for the Conservation of Nature (RSCN)

The Royal Society for the Conservation of Nature, established in 1966, is the oldest environmental non-governmental organization (NGO) in Jordan. While an NGO, the RSCN is mandated by the Government of Jordan to manage public wildlife reserves and protect endangered species. To those ends, it establishes and manages wildlife reserve, breeds and reintroduces endangered species, enforces government laws protecting wildlife, and controls illegal hunting. RSCN also promotes public awareness of environmental issues and problems.

C2. Jordan Environment Society (JES)

The Jordan Environment Society is an NGO with individual and organizational members throughout the country. It promotes environmental awareness, acts as a forum for discussing environmental issues facing Jordan, and serves as a pressure group for environmental protection. The JES currently has two public awareness programs, one funded by the Friedrich Naumann Foundation (FNF) and the other by USAID. The FNF project is called the National Environmental Information and Education Program (NEIEP). Its purpose is to spread environmental awareness to all strata of society, with special emphasis on decision makers. Activities have been aimed at teachers and students, leaders of local NGOs, clerics, and governmental decision makers. The project has developed educational materials including films, publications, symposia proceedings, a newsletter and posters, all of which are distributed free or at a very low price. The USAID program coordinated with MWI is directed at water issues. It is similar to the NEIEP but with more emphasis on training local citizens as environmental educators.

C3. Jordanian Society to Combat Desertification and Develop the Badia (JSCDDDB)

Established in 1990, the society is primarily concerned with conservation of flora and fauna in the Badia to prevent or reverse desertification.

C4. Friends of the Jordanian Environment (FJE)

Friends of the Jordanian Environment was formed by a group of businessmen in 1995 with the objective of creating environmental awareness among the youth of Jordan. The organization focuses on secondary school students and runs an annual competition allowing groups of students from schools to work on environmental problems. Each group identifies a specific environmental problem and develops a feasible solution. The organization works closely with the Ministry of Education.

D. Universities

There are six public universities and at least 27 licensed private universities in Jordan. Three of the public universities have environmental curricula: the University of Jordan, Yarmouk University, and Jordan University of Science and Technology. These universities have laboratories for soil, air and water analyses capable of carrying out specialized tests on environmental elements.

The University of Jordan and Yarmouk University also have environmental research centers. The University of Jordan has two centers: the Water and Environment Research Studies Center and the Environment Unit of the Center for Strategic Studies. Yarmouk University conducts environmental research at the Environment and Earth Science Center. The Aqaba Marine Science Station, which monitors coral reef ecological trends and conducts research on marine ecosystems, is jointly administered by the University of Jordan and Yarmouk University.

Exhibit B-1
National Governmental Responsibilities for Environmental Management In Jordan

INSTITUTION	AREA OF RESPONSIBILITY						
	Cross Sectoral			Water Management	Land and Natural Resources	Urban Environment	Cultural and Natural Heritage
	Planning and Policy	Standards	Monitoring				
GCEP							
MOA							
MOA/DAF							
MOA/DPP							
MOA/PRL							
MEMR/DOP							
MEMR/JEA							
MEMR/NRA							
MEMR/NED							
MEMR/RED							
MOH/EHD							
MOH/HSD							
MIT/DSM							
MOI/DCD							
MOL/OSHI							
MOP/EU							
MPWH/HUDC							
MTA/DOA							
MTA/DOT							

Exhibit B-1
National Governmental Responsibilities for Environmental Management In Jordan

INSTITUTION	AREA OF RESPONSIBILITY						
	Cross Sectoral			Water Management	Land and Natural Resources	Urban Environment	Cultural and Natural Heritage
	Planning and Policy	Standards	Monitoring				
MWI/WAJ							
HCST							
RSS/ERC							
RSS/RERC							
RSCN							
GCEP	General Corporation for Environment Protection			MOI/DCD	Ministry of Interior, Department of Civil Defense		
MOA	Ministry of Agriculture			MOL/OSHI	Ministry of Labor, Occupational Safety and Health Institute		
MOA/DAF	Ministry of Agriculture, Department of Afforestation and Forests			MOP/EU	Ministry of Planning, Environment Unit		
MOA/DPP	MOA, Department of Plant Protection			MPWH/HUDC	Ministry of Public Works and Housing, Housing and Urban Development Corporation		
MOA/PRL	MOA, Pesticide Residue Laboratory			MTA/DOA	Ministry of Tourism and Antiquities, Dept. of Antiquities		
MEMR/DOP	Ministry of Energy and Mineral Resources, Directorate of Planning			MTA/DOT	MTA, Department of Tourism		
MEMR/JEA	MEMR, Jordan Electricity Authority			MWI/WAJ	Ministry of Water and Irrigation, Water Authority of Jordan		
MEMR/NRA	MEMR, Natural Resource Authority			HCST	Higher Council for Science and Technology		
MEMR/NED	MEMR, Nuclear Energy Department			RSS/ERC	Royal Scientific Society, Environmental Research Center		
MEMR/RED	MEMR, Renewable Energy Directorate			RSS/RERC	Royal Scientific Society, Renewable Energy Research Center		
MOH/EHD	Ministry of Health, Environmental Health Division			RSCN	Royal Society for the Conservation of Nature		
MOH/HSD	MOH, Health and Safety Division						
MIT/DSM	Ministry of Industry and Trade, Dir. of Standards and Measures						

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ANNEX C
DONOR ASSISTANCE TO ENVIRONMENTAL PROJECTS AND PROGRAMS

The tables in this annex were prepared in September 1995 and present the environmental projects which at the time were receiving donor assistance (Exhibit C-1) and for which the government of Jordan was soliciting donor assistance (Exhibit C-2). For the purposes of this annex, environmental projects are defined as all projects which deal with:

- General environmental planning and institution building
- Water quantity and quality management, including water supply and wastewater collection and treatment
- Natural resource management, including agricultural land management
- Natural and cultural heritage management, including tourism and protection of archaeological sites, wildlife, and wildlands
- Urban pollution control, including solid and hazardous waste management, industrial pollution control, and air quality management

Structural adjustment loans and general technical support grants, such as the German Study and Expert Fund, are not included in the tables. Although these loans and grants do fund some environmental activities, it is difficult to identify what percentage have been or will be expended on the environment. The projects in the tables were identified by Ministry of Planning staff in the bilateral and multilateral directorates as well as staff in the sectorial directorates.

Not all ongoing projects in Exhibit C-1 are tracked in U.S. dollars. When donor contributions were reported in currency other than U.S. dollars, conversions to U.S. dollars were made using the New York foreign exchange selling rates and European Community Commission ECU values for September 22, 1995, as published in the *Wall Street Journal Europe*, Monday, September 25, 1995.

Exhibit C-1 Ongoing Environmental Projects Receiving Donor Assistance		
Project Title	Donor	Amount (Mil US\$)
General Environmental Projects		
Pesticide Formulation and Residue Control Laboratory	Germany	3.09
Jordan Country Program for the Phaseout of Ozone Depleting Substances	United Nations	5.80
Global Environment Facility Small Grants Program	United Nations	0.30
Feasibility Studies for Mediterranean Environmental Technical Assistance Program	United Nations, World Bank & EU/EIB	0.15
Technical Assistance to the Environmental Unit in the Ministry of Planning	United States	0.28
Project Preparation Advance—Aqaba	World Bank	0.30
Support to Aqaba Regional Authority for Implementation of Aqaba Environmental Action Plan	World Bank	2.80
National Environmental Action Plan	World Bank & Japan	0.10
Total for General Environmental Projects		12.82
Water Projects		
Karameh Dam	Arab Fund	47.62
Study of Deep Groundwater Aquifers in Wadi Araba	Arab Fund & Islamic Bank	1.29
Structural Adjustment and Policy Support Project, Ministry of Water and Irrigation/Water Authority of Jordan/Jordan Valley Authority	Canada	1.00
Maintenance of King Abdullah Canal	EU/EIB	6.05
Water and Wastewater in Salt	EU/EIB	15.79
Raising Al Kafra Dam	EU/EIB	5.79
Water and Wastewater in Jordan	EU/EIB	24.21
Study of Water Pipeline from Adassia to Deir Alla	EU/EIB	0.53
Irbid Area Water Supply Study	France	1.02
Irbid Water Supply Implementation	France	6.09
Study of Existing Water Resource in South Ghor	France	0.61

Exhibit C-1 Ongoing Environmental Projects Receiving Donor Assistance		
Project Title	Donor	Amount (Mil US\$)
Operation Management Support, Water Authority of Jordan	Germany	3.51
Establishment of Planning Policy Unit in the Ministry of Water and Irrigation	Germany	2.81
Technical Advisory Services for Rehabilitation of Amman Water Supply Network	Germany	3.51
Sustainable Use of Brackish Water for Irrigated Agriculture in the Jordan Valley	Germany	2.11
Greater Amman Water Supply, Phase 1	Germany	17.56
Amman Al Samra Sewerage Conveyor	Germany	42.15
Greater Amman Water Supply, Phase 2*	Germany	30.21
Debt Swap, Aqaba Wastewater Project*	Germany	7.28
Debt Swap, Greater Zarqa Wastewater Network*	Germany	5.46
Debt Swap, Irbid Governate Wastewater Network I and II*	Germany	5.74
Water Pipes	Italy	4.34
North Ghor Conversion Project	Japan	39.98
Wadi Al-Seer Wastewater Collection and Treatment	Korea	9.38
Expansion and Development of the Existing Wastewater Systems in Madaba and Ramtha	Korea	1.00
Wala Water Supply	Saudi Arabia	16.11
Qai Al-Disi Hydrogeological Investigation	United Kingdom	4.88
Strengthening of the National Capacity in Water Resources Planning	United Nations	1.00
Water Quality Improvement and Conservation	United States	42.00
Total for Water Projects		349.03
Natural Resources Projects		
Forestry Advisory Services	Germany	7.02
Promotion of Sustainable Plant Protection System	Germany	2.11
Improvement of Watershed Management	Germany	1.90
Jordan Center for Veterinary Vaccines	Germany	6.53

Exhibit C-1 Ongoing Environmental Projects Receiving Donor Assistance		
Project Title	Donor	Amount (Mil US\$)
Agricultural Extension and Enhanced Production in the Lower Zarqa Area	Germany	2.11
Zarqa River Agricultural Project	Germany	
Advisory Services to Ministry of Agriculture	Germany	3.34
Production of Vegetable Seed and Plants	Germany	1.40
Badia Research and Development Program	United Kingdom	14.18
Control of Natural Resources Degradation and Desertification in the Middle East	World Bank	
Technical Assistance for Agriculture Sector	World Bank	6.60
Total for Natural Resource Projects		45.19
Natural and Cultural Heritage Projects		
Jerash Restoration	France	
Petra Stone Preservation	Germany	2.18
Jerash Restoration	Italy	0.58
Mosaic School in Madaba	Italy	0.37
National Policy and Strategy for Tourism	Japan	3.00
Umayyad Complex, Amman Citadel	Spain	0.30
Biodiversity Country Study	United Nations	0.30
Arid Region Nature and Natural Resources Conservation and Rehabilitation—Azraq Oasis and Conservation of the Dana Wildlife	United Nations	6.30
Madaba Project	United States	0.57
Tourism Marketing and Promotion, Jordan Tourism Board	United States	0.40
Cultural and Environmental Resource Management	United States	16.00
Red Sea Marine Peace Park	United States	0.18
Proposed Second Tourism Development Project	World Bank	0.50
Total for Natural and Cultural Heritage Projects		30.68
Urban Projects		

Exhibit C-1 Ongoing Environmental Projects Receiving Donor Assistance		
Project Title	Donor	Amount (Mil US\$)
Promotion of a National System of Metrology, Standardization, Testing, and Quality Assurance	Germany	3.86
Industrial Development*	Germany	3.51
Solid Waste Collection & Transport Equipment for Amman	Japan	4.50
Oil Pollution Prevention in Aqaba*	Japan	5.50
Marine Pollution Control	United Nations	0.30
Total for Urban Projects		17.67
Grand Total for All Environmental Projects		455.39
Notes: *As of September 1995, these projects had been signed, but not implemented. EU/EIB = European Union and European Investment Bank		

Exhibit C-2 Environmental Projects in the Pipeline for Donor Funding	
Project Title	Potential Donor
General Environmental Projects	
Promotion of Environmental Institutions Support to New Environment Corporation Support to Aqaba Regional Authority	Germany
National Agenda 21	United Nations
Capacity 21	United Nations
National Response to the Framework Convention on Climate Change	United Nations
Environment Education Museum	United Nations
Implementation of the Jordan Environment Act	United Nations
Red Sea Strategic Action Plan	United Nations & World Bank
Water Projects	
Wastewater Projects	EU/EIB
Conveyance System for Water, Peace Process	EU/EIB
Dams, Peace Process	EU/EIB
Expansion, Upgrading, and Improvement of Baqa'a-Abunuseir Wastewater Treatment Plants	France Japan
Water Study for Jordan Valley Authority	France
Water Pipeline from Adassia to Alla	Germany
Greater Amman Water Supply	Germany
Water Quality Control and Use of Saline Water in the Jordan Valley	Germany
Study of Deep Groundwater Aquifer Development	Japan
Study of Brackish Groundwater Resource	Japan
Study/Design of Productive Desalinization Plant	Japan
Desalinization Works	Japan
Supply of Equipment for In-line Pumping on Water Supply Pipelines	Japan
Construction, Expansion, and Upgrading of the Wastewater Collection System at Naur and Baqa'a	Japan
Construction of Wastewater Collection and Treatment System in Amman	Japan

Exhibit C-2 Environmental Projects in the Pipeline for Donor Funding	
Project Title	Potential Donor
Integrated Development of Southern Ghor	Japan
Assessment of Natural Radionuclides in Groundwater	United Kingdom
Study of Agricultural Land Application of Sewage Sludge	United Nations
Institutional Capacity Building in Water and Wastewater Sector	World Bank
Natural Resources Projects	
National Range Lands Development	United Nations
Natural and Cultural Heritage Projects	
Development of Dead Sea Coast Infrastructure in Sweimeh and Ghor Zara	EU/EIB
Development of Aqaba South Coast Infrastructure	EU/EIB
Upgrading the Hotel Training College	EU/EIB
Conservation and Sustainable Use of Dryland Biodiversity Within Priority Agro-Ecosystems of the Near East	United Nations
Red Sea Marine Peace Park	United States
Dead Sea Park	United States
Petra Priority Action Plan	World Bank
Urban Projects	
Feasibility Study for Composting Household Solid Waste for Use as a Soil Conditioner	France
Solid Waste Collection and Transport Equipment for Amman (Areas not covered by current project.)	Japan
Study on Hazardous Waste Management	Japan
Implementation of Hazardous Waste Study	Private Sector
Precipitation Enhancement Through Cloud Seeding	United Nations
Environment and Use of Methane from Municipal Waste	United Nations
Treatment of Industrial Waste	United Nations
Alleviating Adverse Effect of Aqaba Industrialization and Port Activities on the Environment	United Nations
Recycling of Industrial Waste and Discarded Used Products	United Nations

Exhibit C-2 Environmental Projects in the Pipeline for Donor Funding	
Project Title	Potential Donor
Regional Urban Solid Waste Management Near International Borders	EU/EIB Private Sector
Implementation of Recommendations from the Industrial Pollution Control Study	World Bank & Japan
Notes: EU/EIB = European Union and European Investment Bank	